ABSTRACT

A STUDY OF COMPRESSIVE STRENGTH OF CONCRETE WITH ARTIFICIAL CALCIUM CARBONATE AS REPLACEMENT PART OF PORTLAND CEMENT

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The use of concrete for infrastructure development at the moment is on the highest level. High compressive strength of concrete become primary factor, the use of concrete expect cheap production cost. The high use of concrete will influence the availability of compiler material like fine aggregate, coarse aggregate, water, and cement. Generally expensive component in concrete is cement. Cement becomes binding component between fine aggregate and coarse aggregate. So, cement takes the important role to reach plan compressive strength of concrete. The use of cement continually at long term will less availability of compiler material cement it self. Therefore, this research is studied the influence of artificial calcium carbonate as replacement part of cement to compressive strength of concrete.

The aim of this research is to reveal artificial calcium carbonate for replacement part of Portland cement. Percentage of artificial calcium carbonate at this research is determined equal to 5% and 10% from cement weight. This research started with modulus fineness test and water ratio for artificial calcium carbonate, then continuously with the other material test. The next step made cylinder concrete for concrete non artificial calcium carbonate and with artificial calcium carbonate. Test of the concrete do with compressive test. The test conducted at concrete age 3.7 and 28 days.

The result showed that compressive strength of concrete without artificial calcium carbonate equal 14.4166 MPa. While concrete with artificial calcium carbonate 5% has compressive strength equal 16.7964 MPa. Then for concrete with artificial calcium carbonate 10% has compressive strength equal 17.1050 MPa. From data can know between concrete without and with artificial calcium carbonate has strength which not far or concrete with artificial calcium carbonate is higher. So that enabled if artificial calcium carbonate use as replacement part of Portland cement. From this research also obtained graphic between calcium carbonate percentage and compressive strength of concrete.

Key words: concrete, artificial calcium carbonate, compressive strenght